

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices".

1.2 Part number. The complete part number shall be as shown in the following example:

84179	01	R	X
-----	-----	-----	-----
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

1.2.1 Device types. The device types shall identify the circuit function as follows:

<u>Device type</u>	<u>Generic number</u>	<u>Circuit</u>
01, 03	8282	Octal, D-type, transparent latch with 3-state outputs
02, 04	8283	Octal, D-type, transparent latch with inverted 3-state outputs

1.2.2 Case outlines. The case outlines shall be as designated in appendix C of MIL-M-38510, and as follows:

<u>Outline letter</u>	<u>Case outline</u>
R	D-8 (20-lead, 1.060" x .310" x .200"), dual-in-line package
3	C-4 (28-terminal, .460" x .460" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range -----	-0.5 V dc to +7.0 V dc
Input voltage range -----	-1.0 V dc at -18 mA to 5.5 V dc
Storage temperature -----	-65° C to +150° C
Maximum power dissipation (P_D) per device -----	1 W
Lead temperature (soldering, 10 seconds) -----	+300° C
Thermal resistance, junction-to-case (θ_C) -----	See MIL-M-38510, appendix C
Junction temperature (T_J) -----	+175° C

1.4 Recommended operating conditions.

Supply voltage:	
Device types 01 and 02 -----	4.5 V dc minimum to 5.5 V dc maximum
Device types 03 and 04 -----	4.75 V dc minimum to 5.25 V dc maximum
Minimum high level input voltage (V_{IH}) -----	2.0 V dc
Maximum low level input voltage (V_{IL}) -----	0.8 V dc
Case operating temperature range (T_C) -----	-55° C to +125° C
Input to STB setup time $t_{(setup)}$ -----	0 ns minimum
Input to STB hold time $t_{(hold)}$ -----	25 ns minimum
Input pulse width (t_P) (Strobe) -----	15 ns minimum

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2. APPLICABLE DOCUMENTS

2.1 Government specification and standard. Unless otherwise specified, the following specification and standard, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of the specification and standard required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices" and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.2 Logic diagrams. The logic diagrams shall be as specified on figure 2.

3.2.3 Truth tables. The truth tables shall be as specified on figure 3.

3.2.4 Case outlines. The case outlines shall be in accordance with 1.2.2 herein.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions <u>1/</u> $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$ Unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
High level output voltage	V_{OH}	$V_{CC} = \text{minimum}$ $I_{OH} = -5.0 \text{ mA}$	1,2,3	All	2.4		V
Low level output voltage	V_{OL}	$V_{CC} = \text{minimum}$ $I_{OL} = 20 \text{ mA}$	1,2,3	All		0.45	V
Input clamp voltage	V_{IC}	$V_{CC} = \text{minimum}$ $I_{IN} = -5.0 \text{ mA}$ $T_C = +25^{\circ}\text{C}$	1	All		-1	V
Low level input current	I_{IL}	$V_{CC} = \text{maximum}$ $V_{IL} = 0.45 \text{ V}$	1,2,3	All		-200	μA
High level input current	I_{IH}	$V_{CC} = \text{maximum}$ $V_{IH} = 5.25 \text{ V}$	1,2,3	All		50	μA
High level input voltage	V_{IH}	$V_{CC} = 5.0 \text{ V}$ $I_{OH} = -5 \text{ mA}$ $C_L = 300 \text{ pF}$	1,2,3	All	2.0		V
Low level input voltage	V_{IL}	$V_{CC} = 5.0 \text{ V}$ $I_{OL} = 20 \text{ mA}$ $C_L = 300 \text{ pF}$	1,2,3	All		0.8	V
Output current, high level, outputs OFF	I_{OZH}	$V_{CC} = \text{maximum}$ $V_{OH} = 2.7 \text{ V}$	1,2,3	All		50	μA
Output current, low level, outputs OFF <u>2/</u>	I_{OZL}	$V_{CC} = \text{maximum}$ $V_{OH} = 0.45 \text{ V}$	1,2,3	All		-50	μA
Supply current	I_{CC}	$V_{CC} = \text{maximum}$	1,2,3	All		160	mA
Functional tests		See 4.3.1c	7	All			

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 1/ -55°C ≤ T _C ≤ +125°C Unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Transition time, low to high (from 0.8 V to 2.0 V) <u>2/</u>	t _{TLH}	C _L = 300 pF ±10% R _L = 78Ω See figure 4	9,10,11	All		20	ns
Transition time, high to low (from 2.0 V to 0.8 V) <u>2/</u>	t _{THL}					12	
Propagation delay time to high level (STB to output) <u>3/ 4/</u>	t _{PLH1}	V _{CC} = 5.0 V C _L = 300 pF ±10% R _L = 78Ω See figure 4	9,10,11	01,03		55	ns
				02,04		45	
Propagation delay time to low level (STB to output) <u>3/ 4/</u>	t _{PHL1}		9,10,11	01,03		55	ns
				02,04		45	
Propagation delay time to high level (data to output) <u>4/</u>	t _{PLH2}		9,10,11	01,03		35	ns
				02,04		25	
Propagation delay time to low level (data to output) <u>4/</u>	t _{PHL2}		9,10,11	01,03		35	ns
				02,04		25	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions ^{1/} -55°C ≤ T _C ≤ +125°C Unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Output control ON to high level output	t _{PZH}	C _L = 300 pF ±10% R _L = 78Ω See figure 4	9,10,11	All	10 <u>2/</u>	50	ns
Output control ON to low level output	t _{PZL}		9,10,11	All	10 <u>2/</u>	50	ns
High level output to output control OFF	t _{PHZ}		9,10,11	All		25	ns
Low level output to output control OFF	t _{PLZ}		9,10,11	All		25	ns

^{1/} V_{CC} = 4.5 V minimum to 5.5 V maximum for device types 01 and 02, unless otherwise specified.
V_{CC} = 4.75 V minimum to 5.25 V maximum for device types 03 and 04, unless otherwise specified.

^{2/} Tested only initially and after any design change.

^{3/} For device types 02 and 04 only, output may be momentarily invalid following the high going STB transition.

^{4/} Device types 02 and 04 limits shown are guaranteed by design but tested to the applicable device types 01 and 03 limits.

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3.3 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in table I and apply over the full case operating temperature range.

3.4 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in 6.4 herein.

3.5 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in 6.4. The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall state that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.6 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.7 Notification of change. Notification of change to DESC-ECS shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.8 Verification and review. DESC, DESC's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

- a. Burn-in test, method 1015 of MIL-STD-883.
 - (1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).
 - (2) $T_A = +125^{\circ}\text{C}$, minimum.
- b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

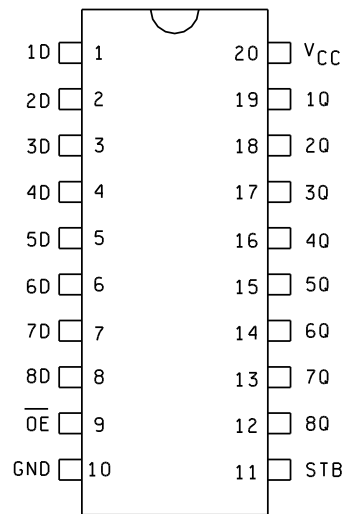
4.3.1 Group A inspection.

- a. Tests shall be as specified in table II herein.
- b. Subgroups 4, 5, 6, and 8 in table I, method 5005 of MIL-STD-883 shall be omitted.
- c. Subgroup 7 functional testing shall include verification of the truth table on figure 3.

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DEVICE TYPES 01 AND 03

CASE R



CASE 03

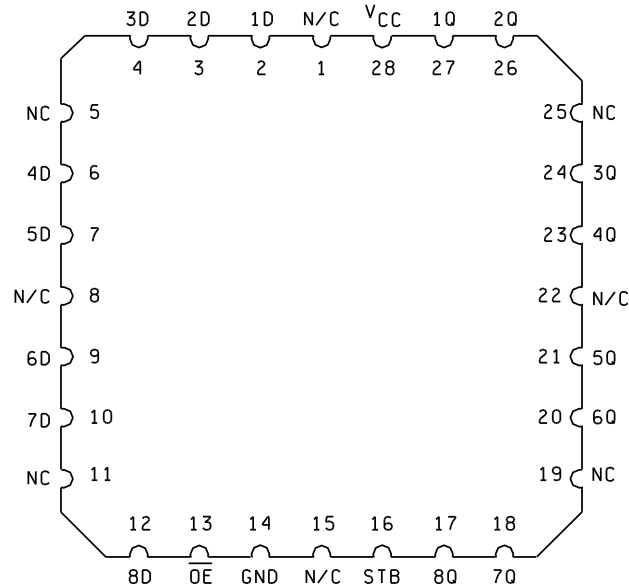


FIGURE 1. Terminal connections.

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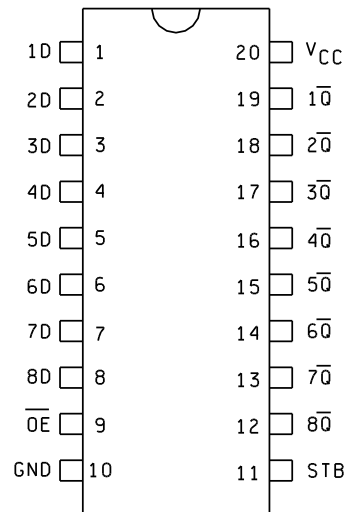
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DEVICE TYPES 02 AND 04

CASE R



CASE 03

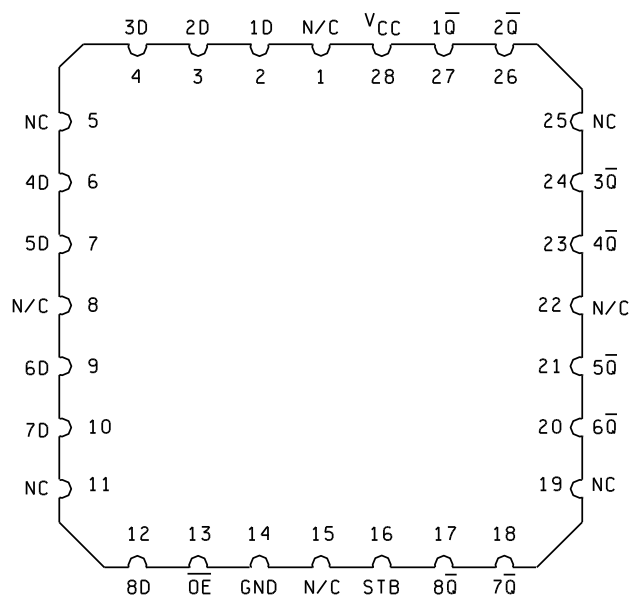


FIGURE 1. Terminal connections - Continued.

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DEVICE TYPES 01 AND 03

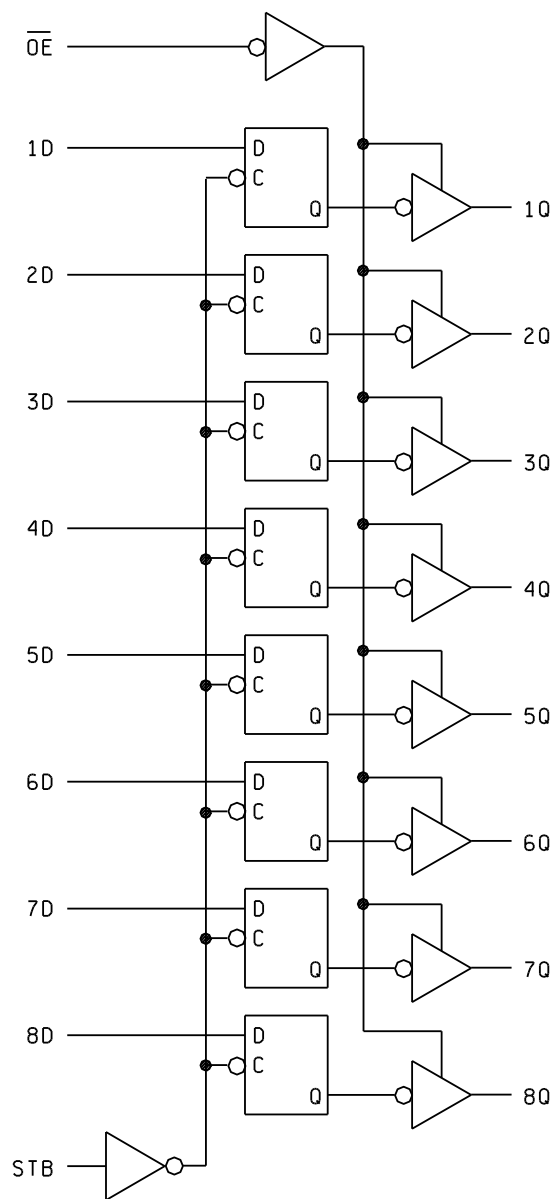


FIGURE 2. Logic diagrams.

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DEVICE TYPES 02 AND 04

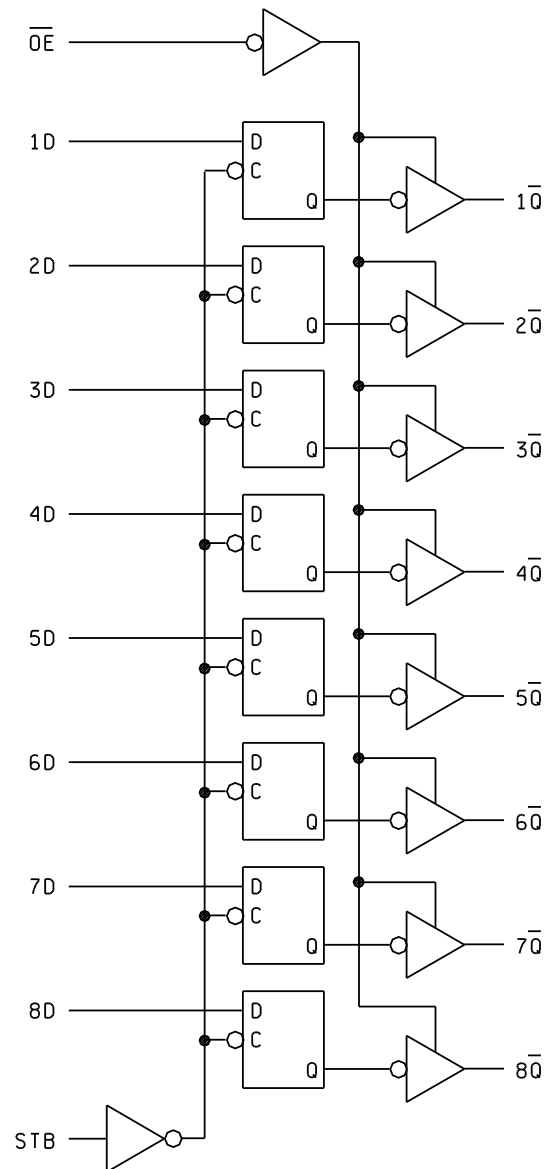


FIGURE 2. Logic diagrams - Continued.

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Device types 01 and 03

OUTPUT ENABLE	STROBE	DATA	OUTPUT
\overline{OE}	STB	D	Q
H	X	X	Z
L	L	X	Q_0
L	H	L	L
L	H	H	H

Device types 02 and 04

OUTPUT ENABLE	STROBE	DATA	OUTPUT
\overline{OE}	STB	D	\overline{Q}
H	X	X	Z
L	L	X	\overline{Q}_0
L	H	L	L
L	H	H	H

Notes for both tables:

H = High level (steady-state)

L = Low level (steady-state)

Z = High impedance state

X = Irrelevant

Q_0 = The level of Q or \overline{Q} before the
indicated input conditions were
established

FIGURE 3. Truth tables.

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INPUT/OUTPUT



AC testing: Inputs are driven at 2.4 V for a logic "1" and 0.45 V for a logic "0". Timing measurements are made at 1.5 V for both a logic "1" and "0". Input rise and fall times are measured from 0.8 V to 2.0 V and are driven at 5 ns \pm 2 ns.

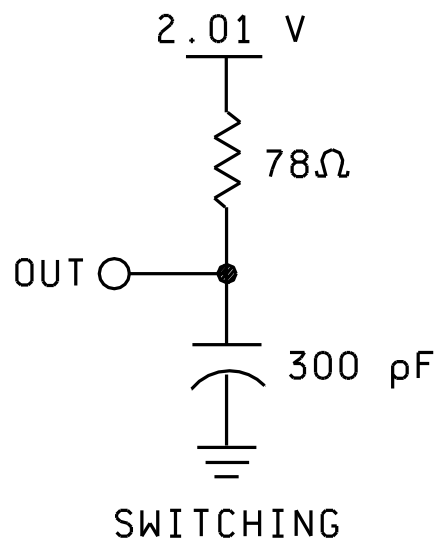


FIGURE 4. Test circuit and switching waveforms.

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TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	---
Final electrical test parameters (method 5004)	1*, 2, 3, 9
Group A test requirements (method 5005)	1, 2, 3, 7, 9, 10, 11
Groups C and D end-point electrical parameters (method 5005)	2, 8A, 10

* PDA applies to subgroup 1.

4.3.2 Groups C and D inspections.

- a. End-point electrical parameters shall be as specified in table II herein.
- b. Steady-state life test conditions, method 1005 of MIL-STD-883.
 - (1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).
 - (2) $T_A = +125^\circ\text{C}$, minimum.
 - (3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

6.2 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

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6.3 Comments. Comments on this drawing should be directed to DESC-ECS, Dayton, Ohio 45444, or telephone 513-296-5375.

6.4 Approved source of supply. An approved source of supply is listed herein. Additional sources will be added as they become available. The vendor listed herein has agreed to this drawing and a certificate of compliance (see 3.5) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>
8417901RX	<u>2/</u>	MD8282
84179013X	<u>2/</u>	MR8282
8417902RX	<u>2/</u>	MD8283
84179023X	<u>2/</u>	MR8283
8417903RX	34649	MD8282/B
84179033X	34649	MR8282/B
8417904RX	34649	MD8283/B
84179043X	34649	MR8283/B

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

2/ Inactive for new design. Not available from an approved source of supply.

Vendor CAGE
number

34649

Vendor name
and address

Intel Corporation
5000 W. Williams Field Rd.
Chandler, AZ 85224

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